Amendments to the Claims

1 1. (currently amended) A method for classifying ~~measured~~ data into ~~multiple~~

2 _N_ classes, the measured data in each ~~class~~ of the _N_ classes having a class-

3 conditional probability distribution, comprising:

4   projecting the class-conditional probability distributions of the

5 measured data into a likelihood space, in which the projected class-

6 conditional probability distributions are estimated, and in which $P_X(X|C_1)$,

7 $P_X(X|C_2)$, ..., $P_X(X|C_N)$ represent true distributions of the measured data from

8 each of the _N_ classes, the subscripted _X_ of the probability _P_ represents a

9 random vector, the _X_ within the parentheses represents a specific instance of

10 the random vector _X_, and the probability _P_ represents the probability that the

11 random vector _X_ takes the value _X_, given that the value _X_ of the random

12 vector _X_ belongs to class C_i, where _i_ is an integer from 1 to _N_, and estimates

13 of the true distributions are $\tilde{P}_X(X|C_1)$, $\tilde{P}_X(X|C_2)$, ..., $\tilde{P}_X(X|C_N)$, and the

14 likelihood projection of the random vector _X_ is an operation $L_N(X)$, resulting

15 in an _N_-dimensional likelihood vector Y_X, and the likelihood vector Y_X is

16 $Y_X = L_N(X) = [\log(\tilde{P}_X(X|C_1))\ \log(\tilde{P}_X(X|C_2))\ ...\ \log(\tilde{P}_X(X|C_N))]$; and

17   classifying the projected class-conditional probability distributions in

18 the likelihood space according to a discriminant classifier in the likelihood

19 space.

1 2. (original) The method of claim 1, in which the projecting is non-linear.

1 3. (currently amended) The method of claim 1, in which the measured data

2 are discrete.

1   4. (currently amended) The method of claim 1, in which the <u>measured</u> data

2   are continuous.

5. (canceled)

1   6. (currently amended) The method of ~~claim 5~~ <u>claim 1</u>, further comprising:

2   applying a likelihood maximization process to training data to obtain

3   the estimated class-conditional probability distributions.

7. (canceled)

1   8. (currently amended) The method of claim 1, in which the <u>measured</u> data

2   represent a speech signal.

1   9. (currently amended) The method of claim 1, in which the <u>measured</u> data

2   represent a visual signal.

1   10. (original) The method of claim 1, in which the discriminant classifier is a

2   linear discriminant with a unit slope.

1   11. (currently amended) The method of claim 1, in which the <u>discriminant</u>

2   classifier is a quadratic discriminant.

1   12. (currently amended) The method of claim 1, in which the <u>discriminant</u>

2   classifier is a logistic regression.

1   13. (currently amended) The method of claim 1, in which the <u>discriminant</u>
2   classifier ~~in the likelihood space~~ is a distribution-based classifier.

1   14. (currently amended) The method of claim 1, in which the projecting
2   ~~distribution~~ <u>operation</u> is a Gaussian function.

1   15. (currently amended) The method of claim 1 in which the projecting
2   ~~distribution~~ <u>operation</u> is a mixture of Gaussian functions.

1   16. (original) The method of claim 1, in which the projecting is invertible.